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Miller et al.

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[54] **PUMP ACTUATOR**

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Related U.S. Application Data

[63] Continuation of Ser. No. 446,454, Dec. 3, 1982, abandoned.

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[58] **Field of Search** ..... 417/410, 412, 413, 63, 417/417-419; 310/33, 22, 29, 36; 73/722, 728; 318/127; 128/10, DIG. 3; 3/1.7

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[57] **ABSTRACT**

An actuator is described for use in a pump having a pump chamber whose contents are expelled by movement of a pair of pusher plates toward one another. The actuator includes opposed solenoid armatures which are operable for movement between open and closed positions. The armatures are each operatively connected to an associated pusher plate by a main spring which is attached at one end to the back end of the armature, extends through a front-to-back slot in an armature core, and is connected at its opposite end to the pusher plate. A pair of preload springs carried on each armature and disposed on either side of the associated main spring acts to hold the main spring in a prestressed condition prior to solenoid actuation. With closure of the armatures, and with the sac still in an expanded condition, the main springs are disengaged from the associated preload spring and placed in a more stressed, more planar configuration, with the increased stress in each main spring being relieved by movement of the pusher plates toward one another.

7 Claims, 6 Drawing Figures